



# Life Science Workforce

MasBioEd's 6th Annual Conference  
June 2nd, 2021 - 10:00AM - 3:00PM



# **Welcome Remarks & MassBioEd's 2021 Life Sciences Employment Outlook and Q&A**

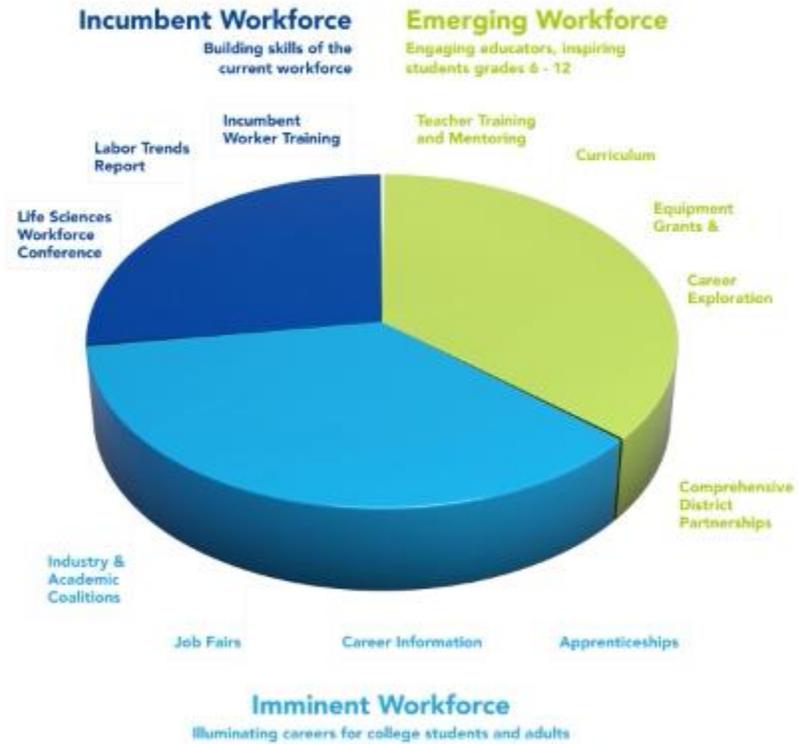
Sunny Schwartz, Executive Director, MassBioEd

Karla Talanian, Director of Talent and Workforce  
Development, MassBioEd

## Our mission

**Our mission is to build a sustainable life sciences workforce in the region through educational programs that engage and excite teachers, inspire and propel students, and illuminate the pathway from the classroom to career with a focus on expansion, opportunity and diversity.**

# Programs



## Impact graphic

**15,000**

Students served in hands-on labs and college and career exploration events

**>50%**

Schools reached were low or very low income

**30+**

Companies and universities served as Career Ambassadors and event hosts

**200+**

Teachers received hands-on training in leading authentic biotechnology labs

**350+**

People accessed our annual Massachusetts Life Sciences Employment Outlook report

**99%**

Teachers reported acquiring greater knowledge & confidence

**220**

Professionals obtained new skills through professional development courses

MassBioEd's programs and services are designed for **SUCCESS.**



## Join Our Mission

Get Involved in our mission through volunteering, contributing, or engaging your company in a variety of ways:

- Become a Career Ambassador
- Host a College or Career Exploration Event
- Become an Apprenticeship Employer
- Donate

# Thank you to our sponsors

## Break-Out Group Sponsor



## Networking Sponsor



## Session Sponsor



## Supporting Sponsor



# Funding Partners





## Expanding the Pool of Workers: Specific Workforce Challenge Areas

Presentations and Facilitated Group Discussions:

### Inspiring College Students to Pursue STEM Careers

Led by Fred Ledley, Director Center for Integration of Science and Industry at Bentley University and Liz Zulick, Director of Lowell Institute School at Northeastern University

### Ending Talent Wars: Growing the Clinical Research Talent Pool

Led by Manny Lazaro, Vice President, Global Clinical Development Operations at Jounce Therapeutics

### Big Tech vs. Biotech: Winning the Competition for Talent in Data Science

Led by Jay Mattetal, Director, Oncology Bioscience at AstraZeneca and Sarita Pillai, Director of STEM & Workforce Success at Education Development Center

### Hiring and Securing Foreign-Born Talent

Led by Jennifer Machat, Director, DEI Recruiting, Early Career & Talent Marketing at Sanofi

### Meeting the Growing Demand for Biomanufacturing Talent

Led by Jeffrey Savard at Bristol Myers Squibb and Craig Meinhardt at Pfizer

### Building Inclusivity and Belonging Into Our Workplaces

Led by Wendy Richards, Director of CSR and Community Relations at Sanofi

### Shifting Strategies: Industry Opportunities to Fill the Talent Gap

Led by Krista Licata, Managing Director at LabCentral

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## **Life Sciences Employment and Hiring Demand *Trends and Implications for the Industry and the Region***

*Karla Talanian*

*Director, Talent & Workforce Development, MassBioEd*

# Big Picture

1. Aggregate Employment Picture
2. Hiring Demand Trends & Comparisons

# Drilling Down

3. What - and Who - Do Employers Want?

# The Talent Pipeline

4. Who Are the Life Science Employees of the Future?

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# Big Picture

## 1. Aggregate Employment

# Total Massachusetts Life Science Employment 2020: **89,424**

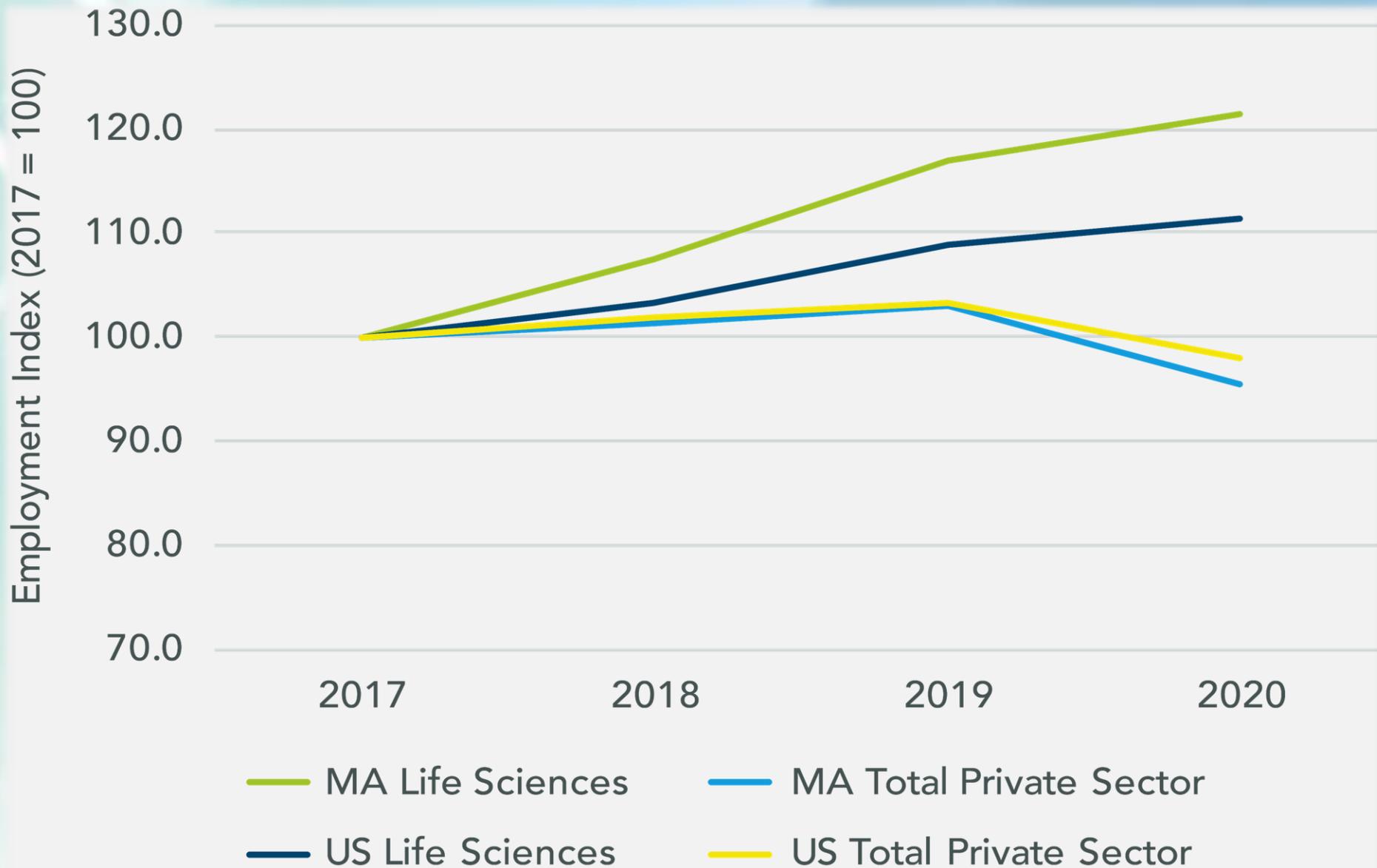
Employment Growth	Massachusetts	U.S.
2010-2020	67%	35%
2019-2020	4%	2%

# MA Industry Location Quotient = 3.60

*or 3.6X more  
concentrated than  
U.S. average*

State	Location Quotient (2018)
California	1.27
New Jersey	2.57
North Carolina	2.38
Illinois	1.59
Pennsylvania	1.41
Indiana	2.61

# Employment Trend for MA and U.S. Life Sciences Industry and Total Private Sector, 2017-20



# Total Massachusetts Life Science Employment Projected Growth:

## **109,424 Total Jobs by 2024**

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# Who Is Employed by the Massachusetts Life Sciences Industry?

**Life Sciences Workforce**

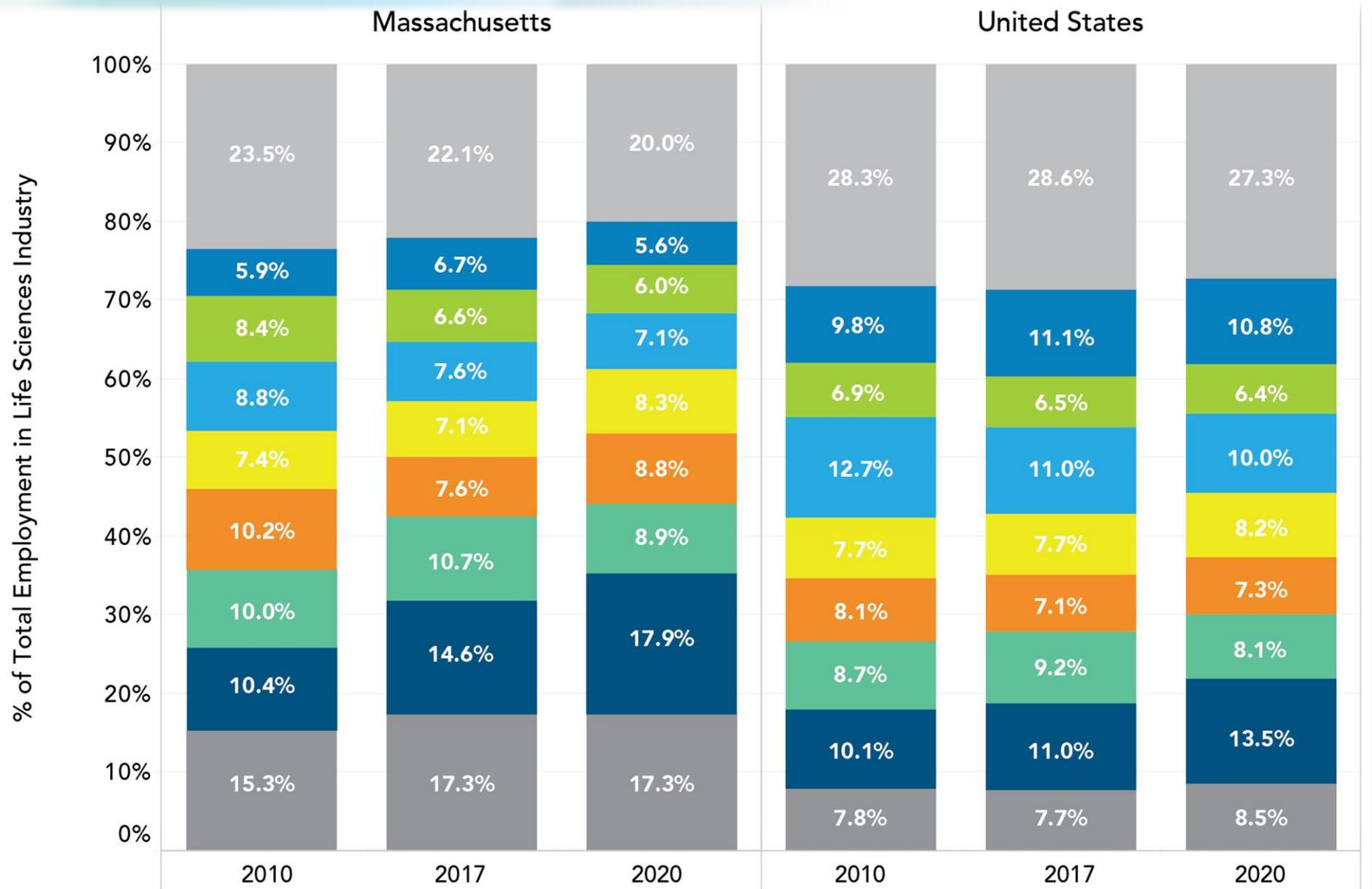
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# Employment Highlights: Specific Occupations

Occupation	2020 Employment Total	Change in Employment 2017-2020
Medical Scientists	10,457	30%
IT occupations (software developers, computer systems analysts, etc.)	4,100	47%
Biochemists and Biophysicists	3,951	14%
Biological Technicians	3,900	13%
Project Managers	2,498	160%
Industrial engineers	2,182	29%
Mechanical engineers	2,051	-9%
Microbiologists	1,300	58%

# Occupational Breakdown of Employment in the Life Sciences Industry - MA and U.S.



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2021

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- All Other Occupations
- Production
- Scientific Technicians
- Office & Administrative Support
- Business & Financial Operations
- IT
- Engineers
- Management
- Life Scientists

# What does all this result in?

- 2,056 Drug Candidates
- 16 candidates pending FDA approval
- 12% of US Pipeline
- 6% of Global Pipeline

Examples of medical indications MA companies are working on:

<i>Solid Tumors</i>	<i>166 INDs</i>
<i>Alzheimer's Disease</i>	<i>34 INDs</i>
<i>Cystic Fibrosis</i>	<i>34 INDs</i>
<i>Ovarian Cancer</i>	<i>27 INDs</i>
<i>Pancreatic Cancer</i>	<i>17 INDs</i>
<i>Sickle Cell Disease</i>	<i>17 INDs</i>

Major industry group	Direct jobs	Supplier jobs	Induced jobs	Total indirect jobs
Utilities	100	515	442	958
Real estate and rental leasing	100	397	483	880
<b>Scientific research and development services</b>	<b>100</b>	<b>519</b>	<b>324</b>	<b>843</b>
<b>Pharmaceutical and medicine manufacturing</b>	<b>100</b>	<b>394</b>	<b>180</b>	<b>575</b>
Information	100	252	321	573
Arts, entertainment, and recreation	100	123	255	379
Finance and insurance	100	150	215	364
Construction	100	88	138	226
Health care and social assistance	100	69	136	206
Educational services	100	64	130	194
Retail trade	100	47	75	122
Food and beverage stores	100	31	41	71

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# Big Picture

## 2. Hiring Demand

# Trend in MA Life Science Industry Job Postings, 2017-20



# Life Sciences Industry Job Postings as Share of Total, 2017-20



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■ MA ■ US

# Take Home Message:

*The Life Sciences Industry is a vital - and growing - part of the entire Massachusetts business ecosystem.*

*The products of our work make people healthier and improve quality of life for patients and families.*

*This industry has an outsized effect on the overall health and vitality of the Massachusetts economy.*

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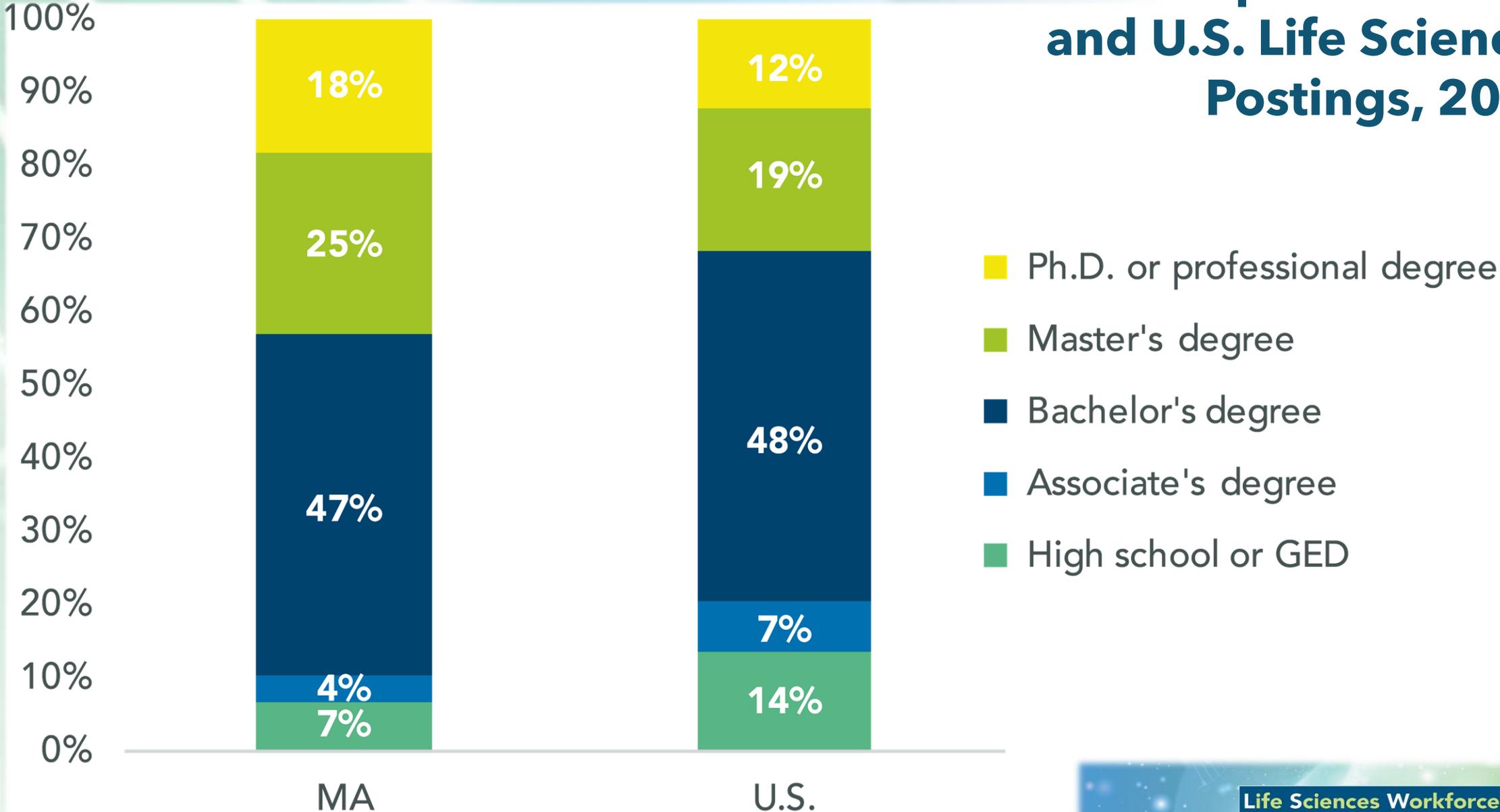
## The Talent Pipeline

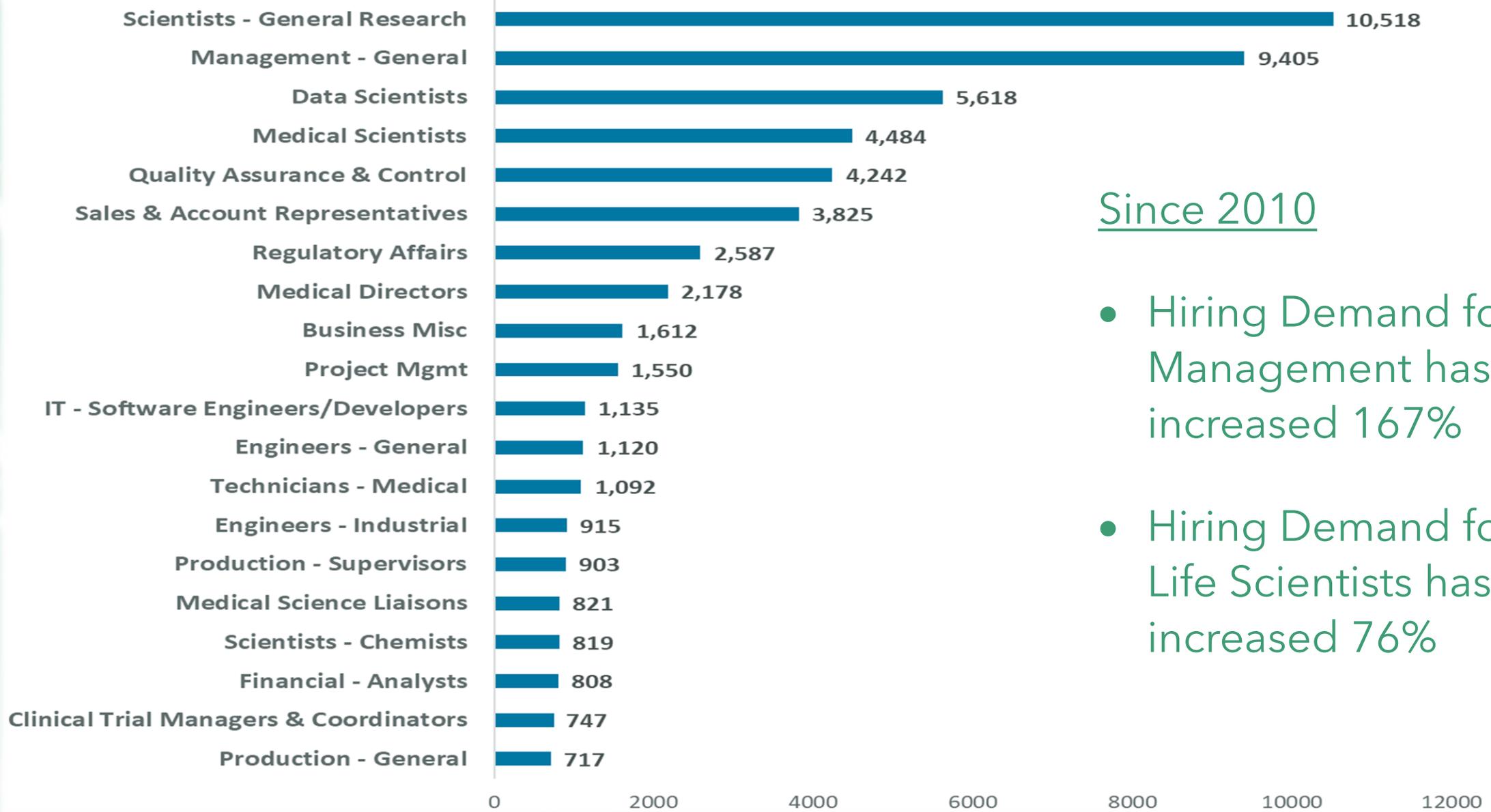
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# Drilling Down

## 3. What Do Employers Want?

# Educational Requirements in MA and U.S. Life Science Job Postings, 2017-20





## Since 2010

- Hiring Demand for Management has increased 167%
- Hiring Demand for Life Scientists has increased 76%

## Most challenging positions to fill:

- Regulatory Affairs
- Research Scientists
- Data Sciences  
(Computational Biology/Statistics)
- Engineering & Product and/or  
Process Development

Expected areas of high-volume hiring over the next year:

- Manufacturing & Production
- Quality Control/Assurance
- Research Scientists

*2021 Hiring Survey Responses*

Survey was done by TEconomy, MassBioEd, and the Coalition of State Bioscience Institutes.

# Take Home Message:

*There is a strong need for hyper-skilled and highly educated scientists...*

*A growing need for people with managerial and operational expertise as companies mature from startup phase into clinical and commercial entities.*

*And an impending need for technical support and for people to run manufacturing operations as the industry matures.*

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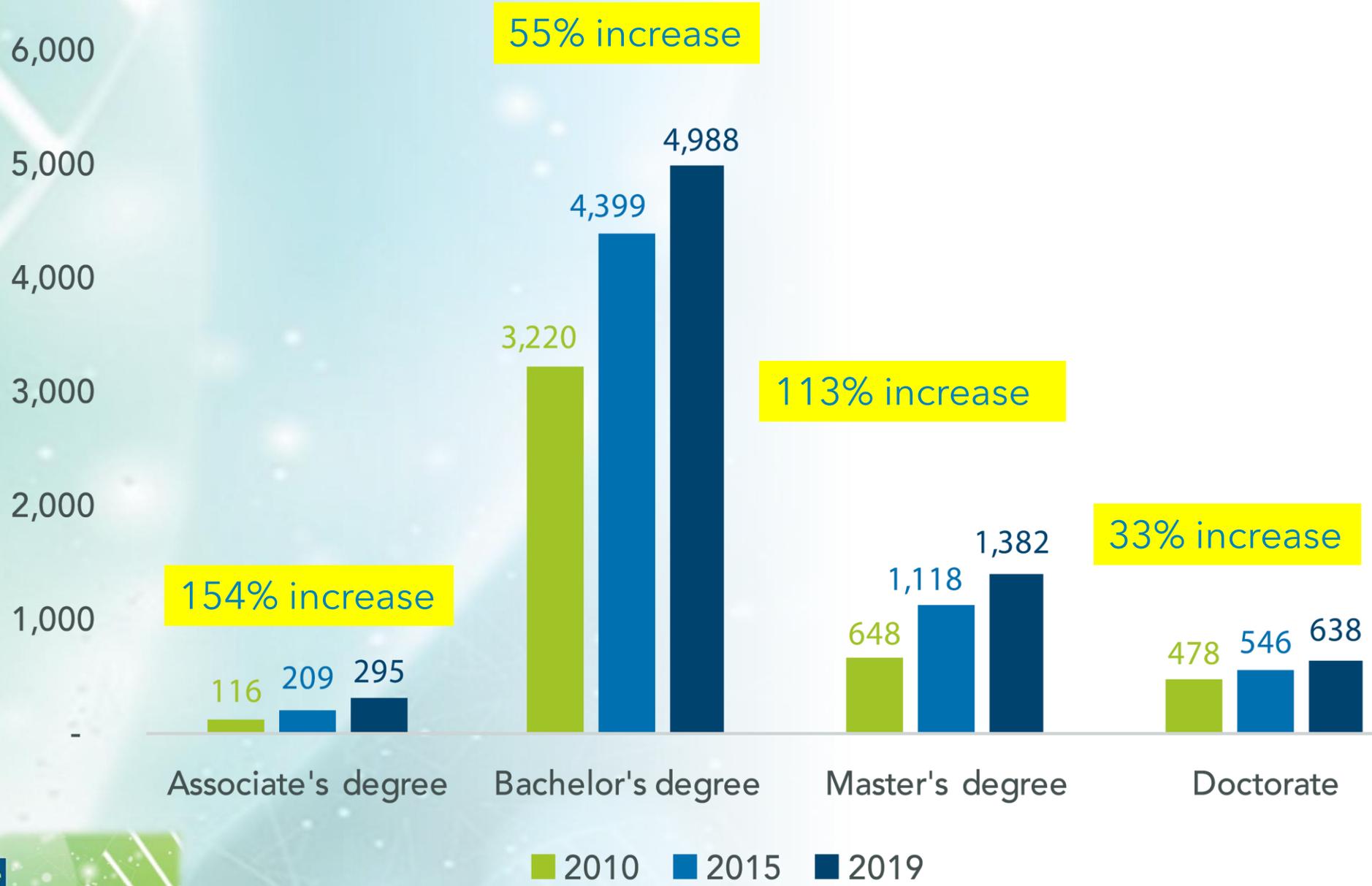
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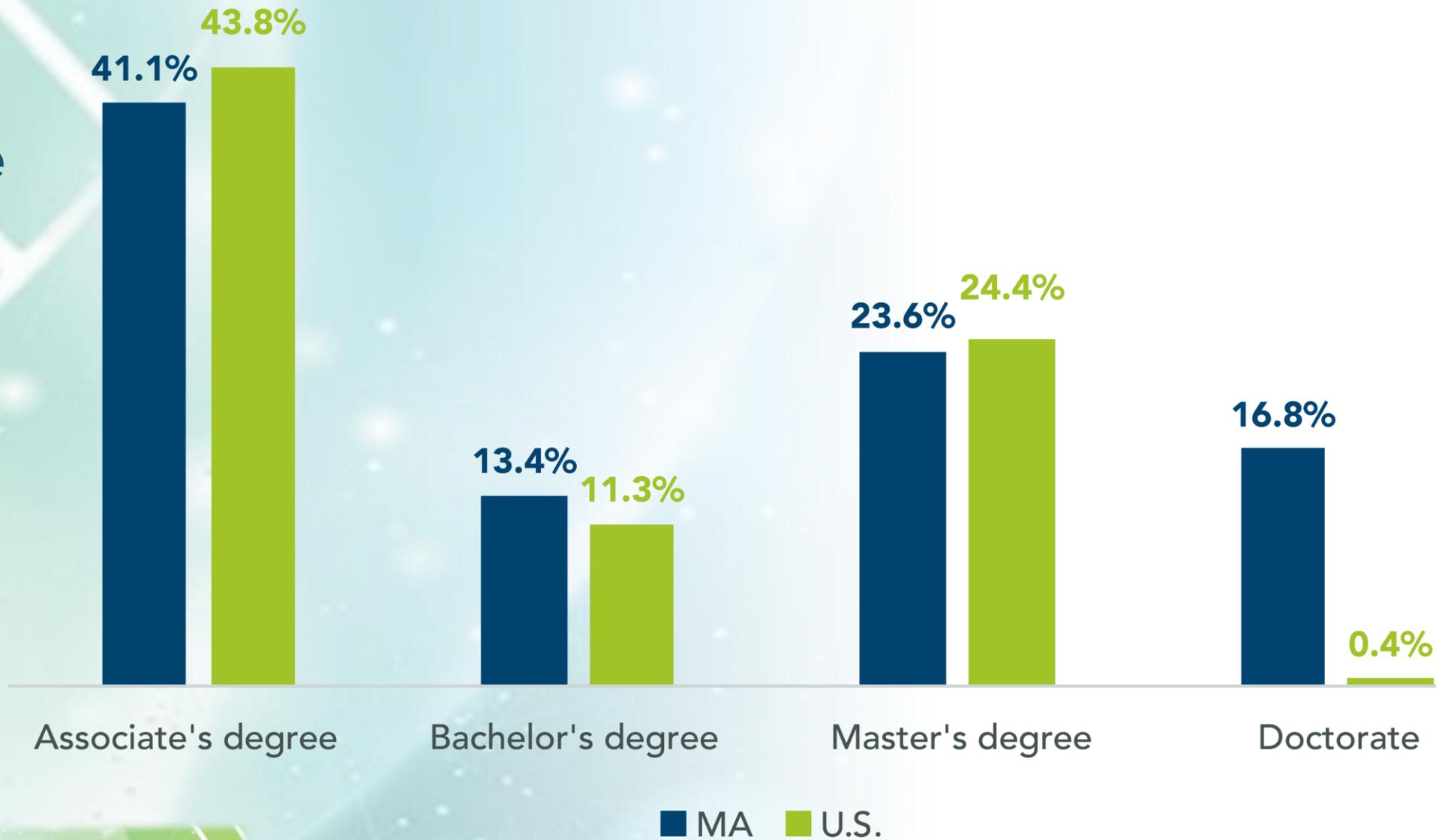
## 4. Who Are the Life Science Employees of the Future?

# Growth in Massachusetts Life Science Graduates by Degree Level,

## Selected Years 2010-19

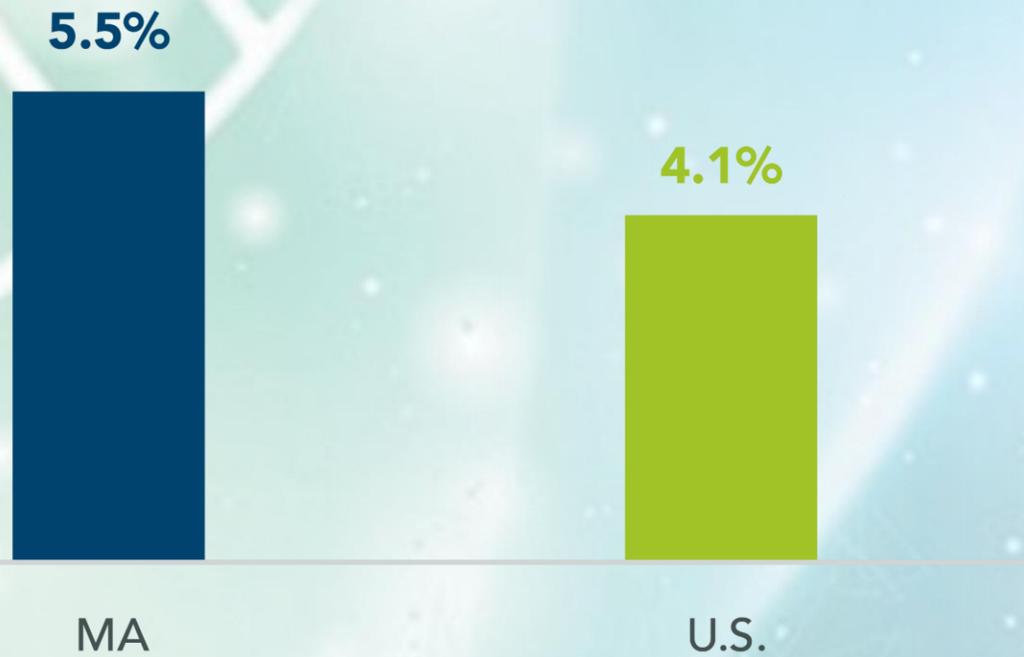


# Growth in Life Science Graduates by Degree Level - Four-Year Trend 2015-19

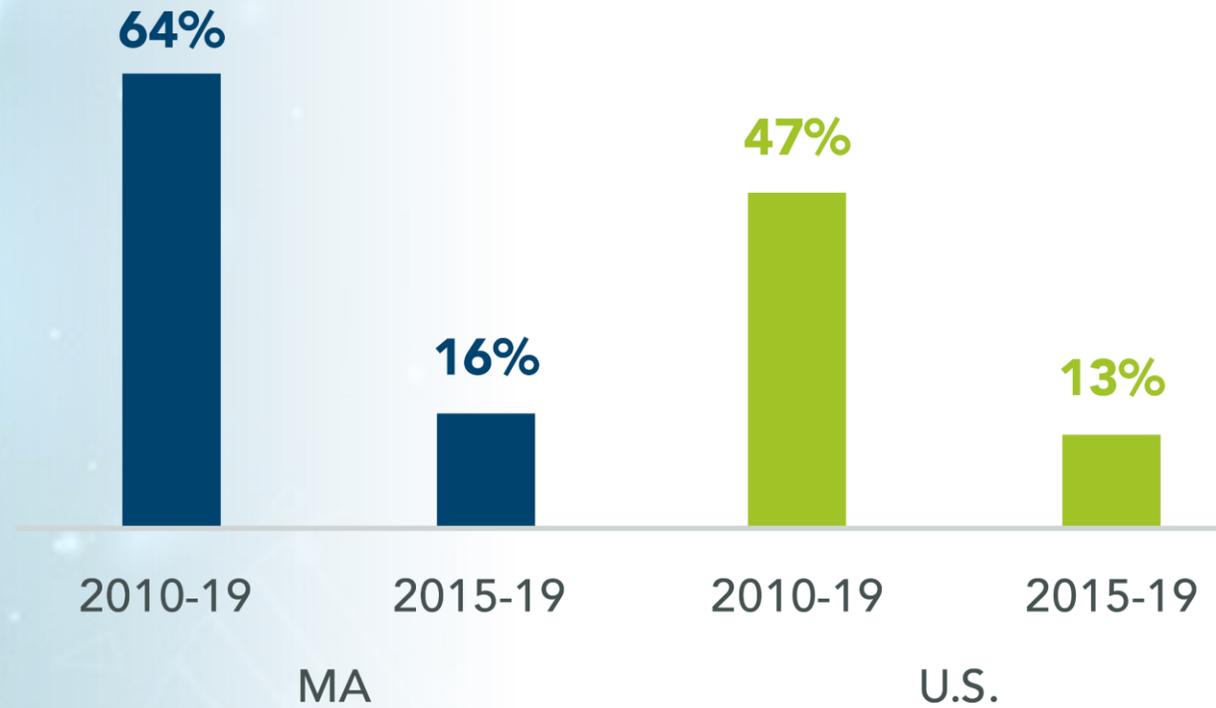


# Growth in All Life Science Degree Graduates AS - PhD

MA Life Sciences Degrees as a Share of Total



Growth in Life Sciences Degrees

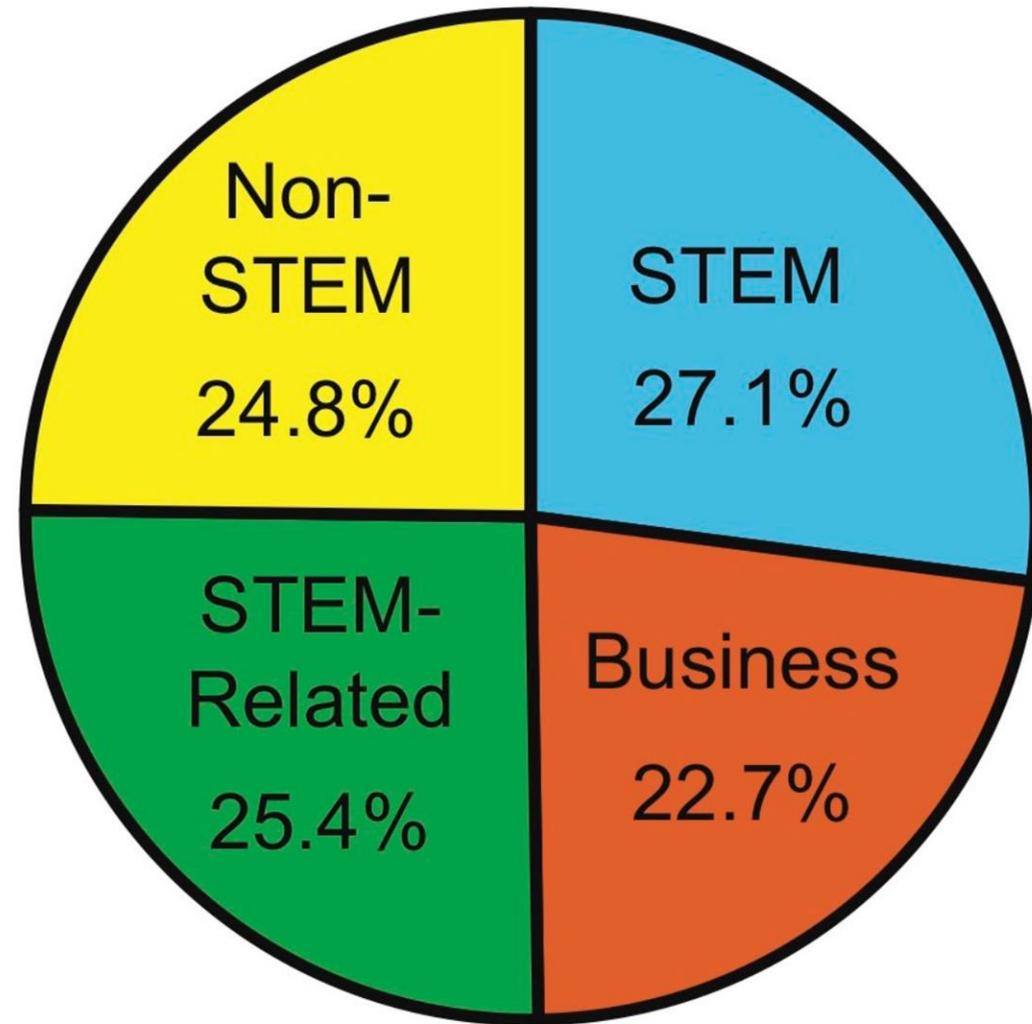


# Since 2010:

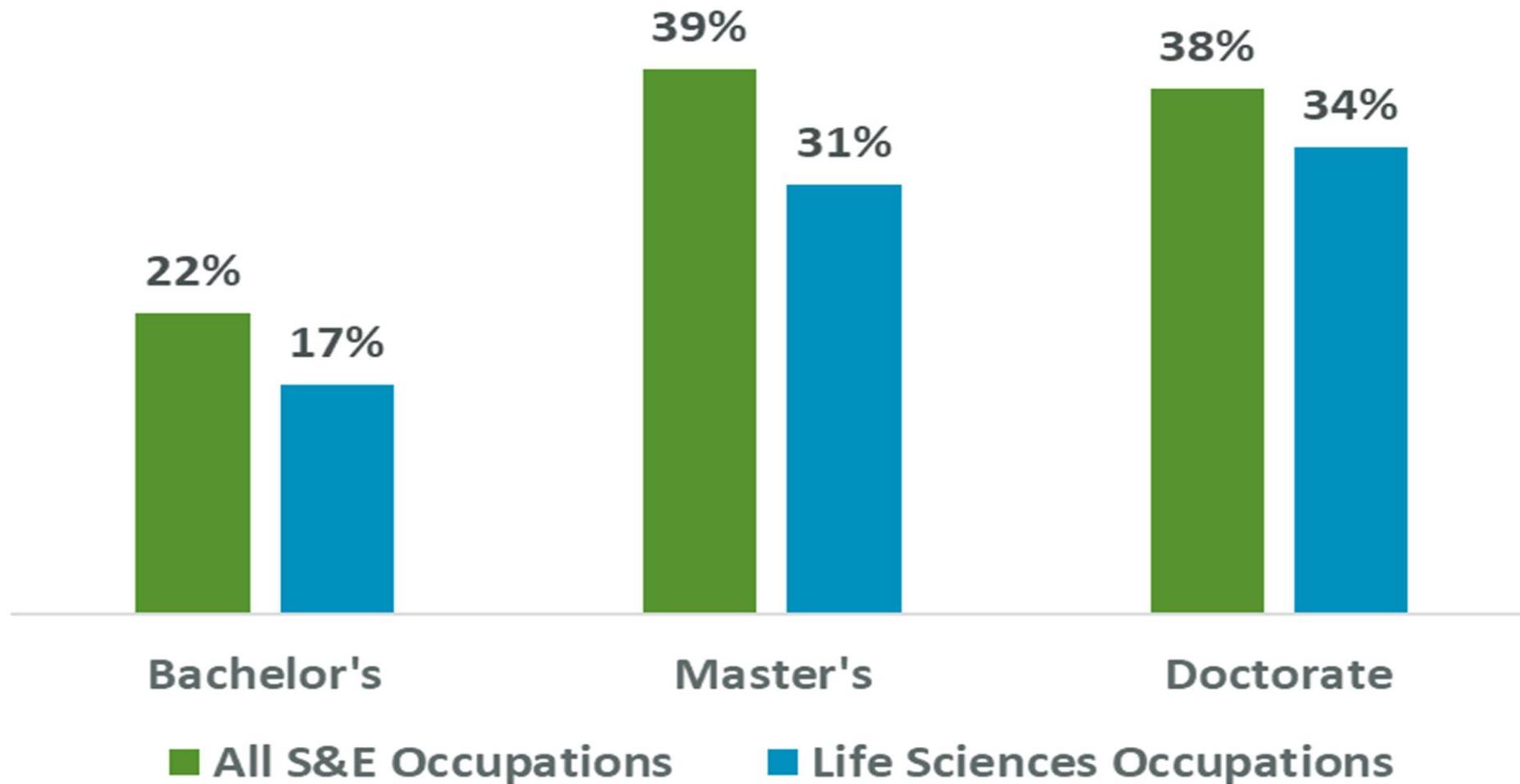
- Massachusetts life science **employment** has grown 67%
- Massachusetts life science hiring demand for **managers** has grown 167%
- Massachusetts life science hiring demand for **scientists** has grown 76%

- Increase in  
Massachusetts life  
sciences graduates:
- Combined MA 64%
  - Combined US 47%

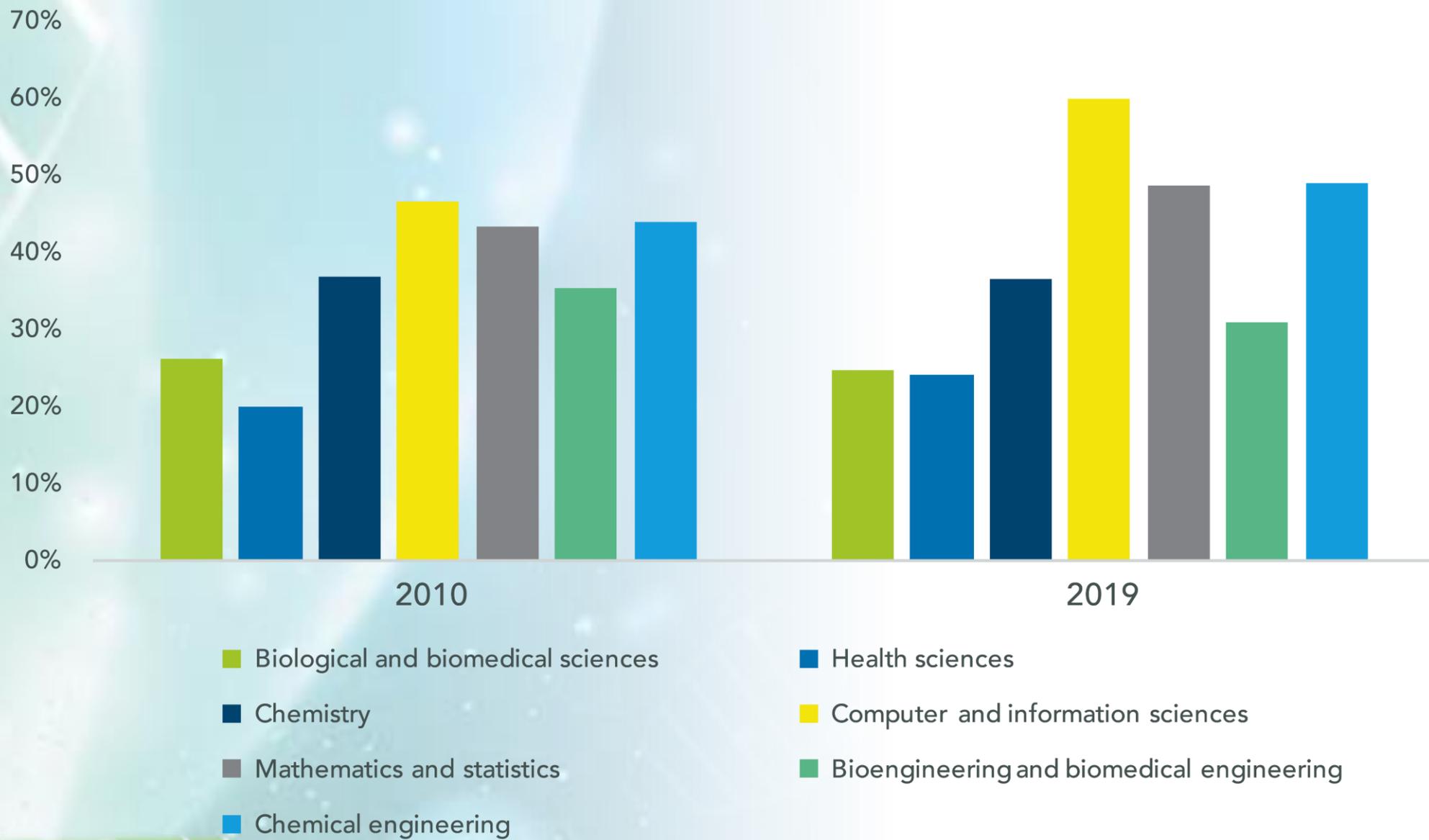
# Career Choices of All STEM Majors



# Foreign-Born Workers' Share of Occupational Employment by Degree Level, 2017



# Temporary Visa Holders as a Percentage of all PhD Recipients in the U.S., by Major Field of Study, 2010 and 2019



# Take Home Message:

*Supply is not keeping up with demand.*

*There is no clear end in sight to the competition for talent.*

*The future of the Massachusetts Life Sciences industry depends on growing the pool of trained, qualified people who can do this work.*

***The Massachusetts life sciences industry  
currently leads the world.***

***Our continued success depends on a  
world-class workforce.***

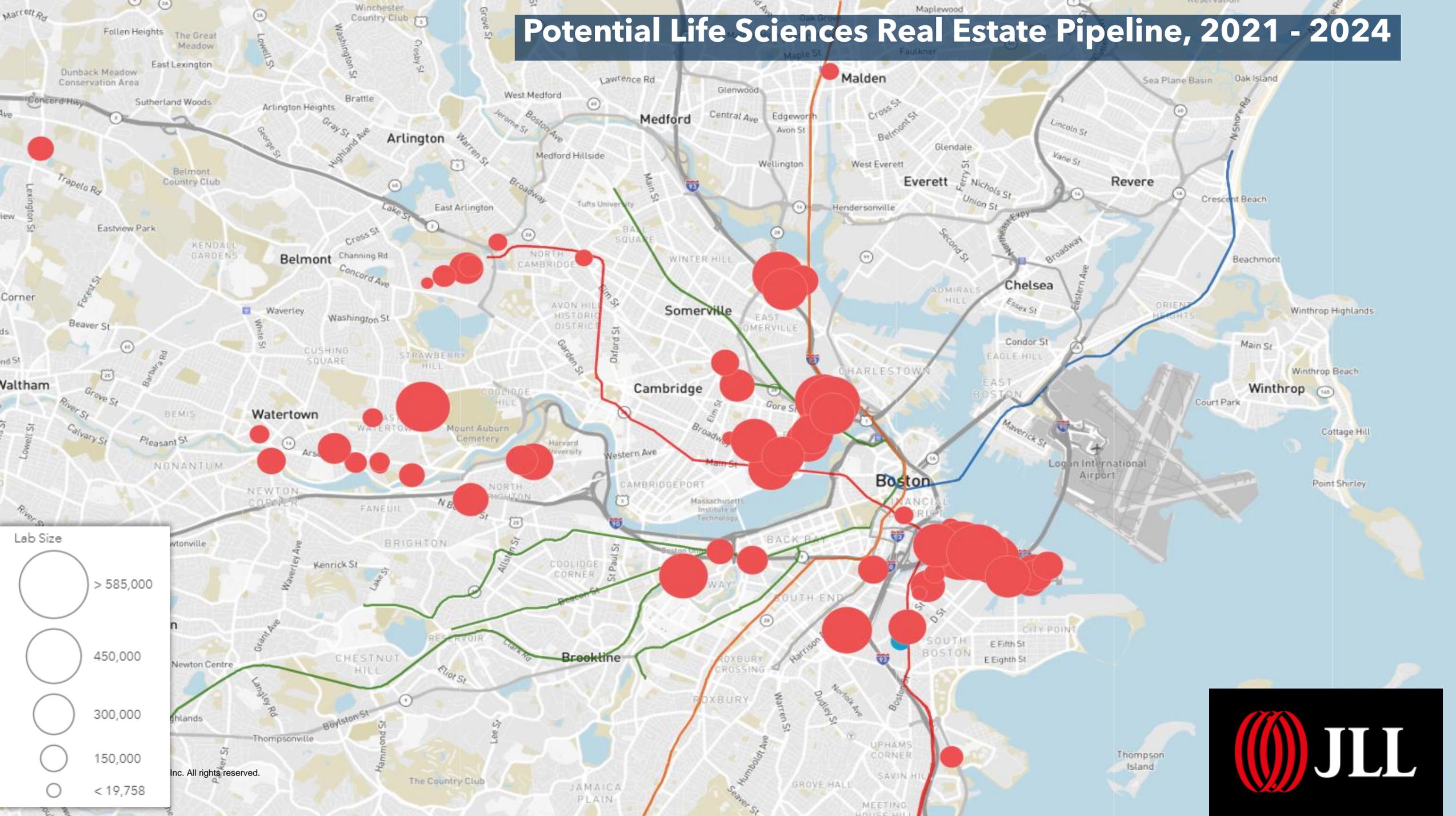
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# Potential Life Sciences Real Estate Pipeline, 2021 - 2024



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# Massachusetts Life Sciences Real Estate Footprint

	Investor Owned	Owner Occupied	Total	Full Pipeline (thru '24)	Pipeline Underway
	X 1,000,000 square feet				
<b>R&amp;D (lab)</b>	26.3			18.3	9.4
<b>GMP</b>	2.7			1.2	0.87
<b>Total (R&amp;D + GMP)</b>	29.0	17.0	<b>46.0</b>	19.5	10.3

# Massachusetts Life Sciences Expansion

<b>Current Total Space</b>	46.0 Million Square Feet	89,000 people currently employed	515 square feet / employee
<b>Low Range of Total Proposed Space</b>	10.3 Million Square Feet	20,000 new employees needed	515 square feet / employee
<b>High Range of Total Proposed Space</b>	19.5 Million Square Feet	38,000 new employees needed	515 square feet / employee



# Expanding the Pool of Workers: Specific Workforce Challenge Areas

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Big Tech vs. Biotech: Winning the Competition for Talent in Data Science

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